

REMARKS

Claims 1-13 stand rejected under 35 U.S.C. §102(e) as being anticipated by Wu et al. (U.S. Patent No. 7,085,829). The rejection is respectfully traversed.

As an introductory matter, Applicants have amended claim 1 to address the Examiner's concern regarding the preamble, to include features from claim 2 and to recite aspects of the claimed "repartitioning" of client connections as expressed therein. No new matter has been added. Support for the amendments appears in Applicants' specification at, for example, paragraphs 12, 39, 40, 41, and 42. Claims 2 and 9 have been canceled. Claims 3, 6-8, and 10, have been amended in view of the foregoing changes and to address Examiner's other § 112 concerns.

Claim 1 is directed to a system for managing client connections in a partitioned-resource storage system. Clients of the system establish connections with the servers to access a resource distributed across the servers. A load monitor process on each of the servers measures system and client load. A client distribution process on each of the servers redistributes connections between the clients and servers based on the system load. Claim 1 expressly recites that the "repartitioning" of client connections moves a connection from one server on which the resource is partitioned, to another server on which the resource is partitioned. Thus, the system of claim 1 is not a proxy-style approach in which an initial proxy server determines which of a plurality of servers may handle a client request (although it may be used in conjunction with such a system for initially selecting a server). Applicants' system "moves" connections after clients have made a connection with a first server that can serve the client's request (i.e., a storage server having a resource partitioned thereon).

The operation of Applicants' connection management in a partitioned-resource storage system can be understood from the illustrative embodiment of FIG. 5. As an initial condition for this example, three clients have a connection established with server 161, and two clients have a connection established with server 163 – no clients have a connection established with server 162. Each server 161, 162 and 163 is responsible for different data blocks, pages, etc. of a resource partitioned across the group, and is capable of servicing client requests. In such a system, a client's requests are serviced by the server with which the client has an established

connection. If a server does not have the portion of a resource relevant to a client's request (e.g., the relevant block, page, etc.), the server will communicate with another server within the group to obtain the necessary portion and return a reply to the client.

The client-server connections in such a system are long-lived and typically last across periods of time during which different system and client loads are experienced by the group and respective servers. As a result, any initial client-server assignment for a new connection based on load (see, e.g., the discussion at paragraph 41 et seq.) may subsequently not yield the best overall or server-specific performance. To address this issue, the system periodically "redistributes" existing client connections based on load. For example, in FIG. 5, a client distribution process 30 moves the connection for client 3 (12C) connection from server 161 to server 162 (see, e.g., paragraph 45) based on load measured by a distributed load monitoring process. Once the connection is moved, server 162 services requests for client 3 (12C) requests (which may involve accessing other servers for portions of the resource that are not stored on server 162).

Wu does not disclose anything like Applicants' claimed system. First, Wu is not a system in which resources are partitioned across storage servers. It is a VoIP system in which each server handles VoIP sessions. None of Wu's servers provide access to a resource having a portion partitioned thereon (and the remainder on other servers). So in the first instance, Wu is wholly inapposite to Applicants' claimed system.

Moreover, Wu does not disclose moving established client connections between its VoIP servers. It instead discloses a proxy-style load balancing process which (a) is not implemented on each VoIP server and (b) selects a VoIP server for a new connection based on load conditions, but never subsequently moves the connection to another server. For example, in col. 3, lines 2-4, Wu teaches that workload data is used to determine which proxy server connects with the client to transmit and receive voice data. The client merely communicates with the primary proxy server before actually connecting with the server selected to handle the request (see Wu col. 3, lines 57-60). The initial proxy server thus acts as an intermediary to determine with which server the client should establish its connection (see Wu FIG. 3). Once a connection is established with a server, the connection is never moved to accommodate system load. This is entirely different from Applicants' load balancing approach, which occurs after an initial

connection is established and is capable of then moving the client from the initial server to a second.

Not surprisingly, Wu does not move established connections. In its system, a VoIP system, connections are relatively short lived (for example, a connection lasts for the average length of a telephone call). Load balancing can be limited to the time new connections are established – connections are starting and ending all the time. But in a partitioned storage system, connections may last much longer and across disparate loading conditions. Therefore, the capability of moving connections from one server to another is desirable.

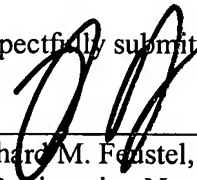
In view of the above amendments and remarks, Applicants believe the pending application is in condition for allowance (Applicants reserve the right to argue the separate patentability of the dependent claims should prosecution continue). Reconsideration and allowance are respectfully requested.

Finally, Examiner drew to Applicants' attention that the March 16, 2006 IDS did not include the signature of Applicants' representative. Applicants appreciate Examiner considering the references cited in the March 16 IDS and returning the SB/08a/b form, despite the signature's absence.

Applicants believe no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 18-1945, under Order No. EQLC-P01-006 from which the undersigned is authorized to draw.

Dated: May 18, 2007

Respectfully submitted,

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